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09/785,188	02/20/2001	John F.T. Conroy		3777

7590

05/20/2003

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EXAMINER

NAFF, DAVID M

ART UNIT

PAPER NUMBER

1651

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/785788

Applicant(s)

Conroy et al

Examiner

Naf

Group Art Unit

1657

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 2/19/03
- ☒ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-29 + 31-34 is/are pending in the application.
- Of the above claim(s) 1-14 + 27 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 15-28, 28, 29 + 31-34 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

The amendment of 2/19/03 canceled claim 30 and amended claims 15, 17, 28, 29 and 31-36.

Claims 1-14 and 27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10 filed 7/26/02.

Claims examined on the merits are 15-26, 28, 29 and 31-36.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10 ***Claim Objections***

Claim 31 is objected to because of the following informalities: the claim depends on canceled claim 30. Appropriate correction is required.

Claim Rejections - 35 USC § 112

15 Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is unclear how it further limits claim 29 since the cell of claim 29 is inherently entrapped in the network due to the cell being added to the sol before condensing.

20 ***Claim Rejections - 35 USC § 103***

Claims 26, 28, 29 and 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uo et al (AL) in view of Hino et al (4,148,689).

25 Claim 26 is drawn to mixing a vegetative cell into a sol, mixing a dispersant into the sol to cause macropores in a gel formed by the sol and gelling the sol. Claim 28 requires gel containing a macroporous

solid network formed by condensing hydroxy metallates from a sol solution containing a bacterial cell. Claims 29 and 31-36 are drawn to the same type of gel as claim 28 except that the cell is a vegetative cell.

Uo et al disclose immobilization of yeast cells in a porous silica
5 carrier with the sol-gel process by forming a mixture containing tetramethoxysilane (TMOS), water, and PEG, hydrolyzing to form a sol, adding yeast spores, and forming a gel. See paragraph 2.3 on page 427. The porous gel can have pore diameters ranging from 0.1 μm to 10 μm which are macropores (page 429, paragraph 4).

10 Hino et al disclose hydrolyzing an alkoxysilane to form a sol, adding such as bacterial cells or yeast cells (col 7, lines 1-47) and gelling the sol to obtain a gel with the cells immobilized therein.

It would have been obvious to use bacterial cells in place of the yeast spores of Uo et al when the function of bacterial cells is desired
15 as suggested by Hino et al producing a gel by a method similar to that of Uo et al and using bacterial cells. To use the bacterial cells in the vegetative state would have been obvious since this is the state the cells normally are present. The resultant gel would have inherently transmitted light as required by claims 31-35.

20

Response to Arguments

Applicants' argument that Uo et al use yeast spores instead of bacterial or vegetative cells as claimed is unpersuasive since Hino et al suggest bacterial and vegetative cells as an alternative to yeast spores. While Uo et al disclose that yeast spores are durable to organic
25 solvents, Hino et al may use an organic solvent (col 20, lines 44-45),

and it would have been expected that bacterial cells and vegetative cells can be used in combination with the organic solvent used by Uo et al.

Claim Rejections - 35 USC § 103

Claims 15-23 and 25 are rejected under 35 U.S.C. 103(a) as being
5 unpatentable over the references as applied to claims 26, 28, 29 and 31-36 above, and further in view of Klein et al (EJ) and Rao et al (AR).

The claims require a sol containing a P moles of hydroxy metallate, W moles of water, dispersant to cause macropores in a gel formed from the sol and a biological material, and a ratio of W:P greater than 25:1.

10 Klein et al disclose the effect of water on hydrolysis of TEOS and Rao et al disclose the influence ratios of precursor, catalyst, solvent and water on properties of silica aerogels.

It would have been a matter of obvious choice and require only limited routine experimentation to select a preferred optimum amount of
15 water in Uo et al in view of the disclosures of Klein et al and Rao et al as to the effect of varying the water content.

Response to Arguments

Applicants urge that in Klein et al ethanol is required to permit solubility for increased water in the sol. However, the present claims
20 do not exclude the presence of ethanol to increase solubility. While Klein et al does not describe a biological material in the sol, such a material would have been suggested by Uo et al and Hino et al. The references are applied together and must be considered in combination as a whole.

Claim Rejections - 35 USC § 103

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 15-23 and 25 above, and further in view of Schmidt et al (AV).

5 The claim requires an organic solvent to be produced as a by-product of hydrolysis.

Schmidt et al disclose that hydrolysis of alkoxysilanes produces an alcohol.

It would have been obvious that hydrolysis in Uo et al will produce
10 an alcohol as taught by Schmidt et al.

Response to Arguments

No arguments were presented traversing the rejection over Schmidt et al.

Applicant's amendment necessitated the new ground(s) of rejection
15 presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**
See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the
20 event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from
25 the mailing date of the advisory action. In no event, however, will the

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statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone
5 number is (703) 308-0520. The examiner can normally be reached on Monday-Thursday and every other Friday from about 8:30 AM to about 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, a message can be left on voice mail.


10 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn, can be reached at telephone number (703) 308-4743.

The fax phone number is (703) 872-9306 before final rejection or (703) 872-9307 after final rejection.

15 Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

20

DMN
5/19/03


DAVID M. NAFF
PRIMARY EXAMINER
ART UNIT 12657